

# Chapter 1: Grid Computing in a Nutshell

To satisfy emerging IT needs in the scientific, industrial, governmental and commercial arenas, grid computing has been conceived as an expansion of distributed computing. Grid computing involves the distribution of computing resources among geographically separated sites (creating a “grid” of resources), all of which are configured with specialized software for routing jobs, authenticating users, monitoring resources, and so on. Shared, site-based computing resources may include computing and/or storage nodes, software, data, a variety of scientific instruments, and so on.

Grids aim to provide reliable and secure access to these geographically separated resources for authorized users located virtually anywhere in the world. When a user submits a job, the grid software controls where the job gets sent for processing. Think of a grid as a utility, much like the electrical utility grid. A company may buy electric power from a variety of physically separate sources, pool it, and distribute it to all its customers with high reliability. The customers don’t need to know where their electricity originates, just that their wall sockets always work. In grid computing, the end user doesn’t need know where particular resources reside, just that they are available with high reliability<sup>1</sup>.

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1. Text taken from <http://computing.fnal.gov/cd/physics/gridoverview.html>.

